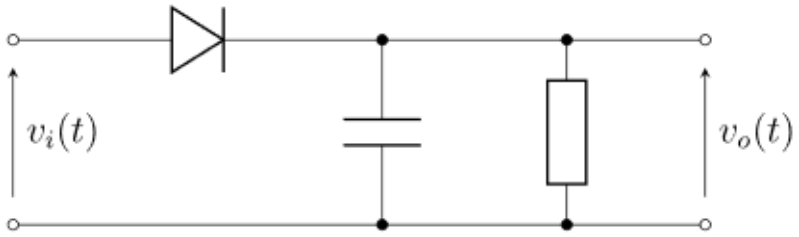
Численное решение ОДУ. Модель детектора АМ-сигнала

appVersion(4) = "1.2.9018.0"

$R := 100 \qquad C := 1.5 \cdot 10^{-6}$

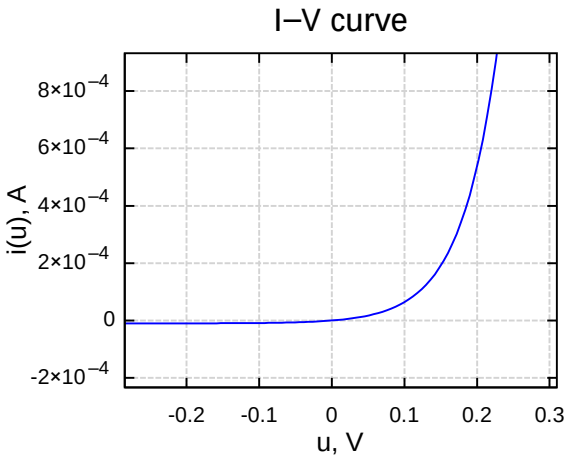
$I_0 := 1 \cdot 10^{-5}$

$i(u) := I_0 \cdot \left(\exp\left(\frac{u}{0.05}\right) - 1\right)$



$f := 15 \cdot 10^3 \qquad F := 1 \cdot 10^3 \qquad Um := 5 \qquad ma := 0.5 \qquad \omega := 2 \cdot \pi \cdot f \qquad \Omega := 2 \cdot \pi \cdot F$

$u_{in}(t) := Um \cdot (1 - ma \cdot \cos(\Omega \cdot t)) \cdot \sin(\omega \cdot t)$



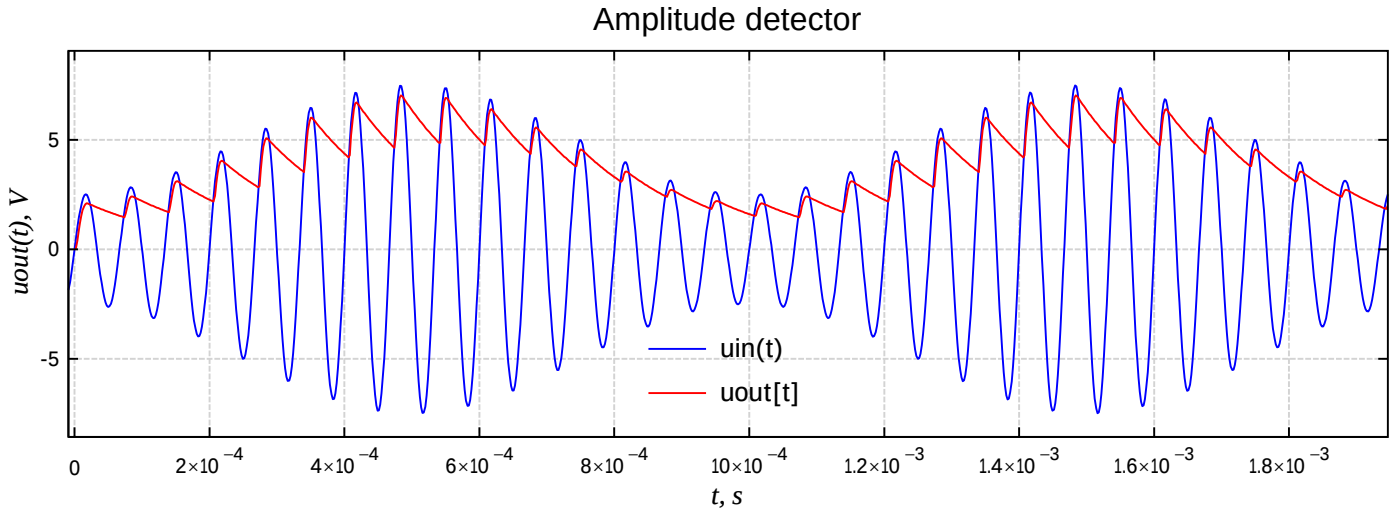
$u_0 := 0 \qquad t_{min} := 0 \qquad t_{max} := 0.002 \qquad steps := 1000$

$\Delta u(t) := u_{in}(t) - u(t) \qquad start := \text{time}(0)$

$$\begin{cases} u'(t) \cdot R \cdot C = R \cdot i(\Delta u(t)) - u(t) \\ u(t_{min}) = u_0 \end{cases}$$

$u_{out} := \text{al\_rkckadapt}(u(t), t_{max}, steps)$

$\text{time}(0) - start = 8.977$ c



$$\begin{cases} u_{in}(t) \\ u_{out} \end{cases}$$